REMARKS

Claims 1-11 and 13-20 are pending. Claims 1, 2, 4-6, 8, 9, and 20 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent Application No. 2003/0011043 (Roberts). Claims 11, 13, 15, and 16 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,099,701 (Liu) under 35 U.S.C. §102(b). Claims 3, 7, 10, and 14 are objected to as being dependent upon a rejected base claim. Claims 17-19 are allowed. Applicants submit that the amendment does not add new material to the current Application. No amendment made is related to the statutory requirements of patentability unless expressly stated herein. No amendment made is for the purpose of narrowing the scope of any claims, unless Applicants argue herein that such amendment is made to distinguish over a particular reference or combination of references.

Claims Rejections

Claims 1, 2, 4-6, 8, 9, and 20 are patentable under 35 U.S.C. §102(e) over Roberts

Applicants respectfully submit that claims 1, 2, 4-6, 8, 9, and 20 are patentable under 35 U.S.C. §102(e) over Roberts (U.S. 2003/0011043) because Roberts fails to teach all features of at least independent claims 1 and 20 from which claims 2, 4-6, 8, and 9 depend. More specifically, Roberts fails to teach a first conductive smoothing layer formed over the first electrode, wherein the first smoothing layer has a surface roughness less than that of the first conductive electrode, as stated in independent claims 1 and 20. The Examiner contends that Roberts' element 16 is the first conductive smoothing layer as claimed in the present application. This is improper for the following reasons.

First, Roberts teaches that element 16 is a dielectric oxidation barrier layer (Figure 7, element 16 and paragraphs 12 and 14). Specifically, in Figure 7, it is seen that element 16 runs the entire length of the figure. If this were, as the Examiner contends, a conductive material, all other neighboring capacitors (not shown) would be shorted to one another. In the current application, the conductive smoothing layer (also element 16) is seen only over the surface of the bottom electrode. Regardless, Roberts' element 16 is not conductive and is not taught, nor contemplated, to be such.

Second, Roberts does not teach that element 16 has any smoothing properties, nor any specific surface roughness, as required by the current application. The Examiner refers to Paragraph 17, lines 25-35. In this section of Roberts' publication, however, it states only that the oxidation barrier layer 16 be very conformal (e.g. not varying in thickness). Roberts continues to present the properties of element 16 in Paragraph 17 stating that in order to achieve a thin conformal oxidation barrier layer 16, a smooth top surface of bottom electrode 14 is desirable and that this can be accomplished by modification of the chemical mechanical polishing process. Thus, Roberts teaches that the smoothing properties be exhibited by the bottom electrode and not by careful selection of a conductive smoothing layer as taught in the present application.

For at least these reasons, claims 1, 2, 4-6, 8, 9, and 20 are patentable under 35 U.S. §102(e) over Roberts (U.S. 2003/0011043).

Furthermore, claims 1 and 20 and their dependencies are patentable over Roberts in all regards since Roberts fails to suggest forming any type of conductive smoothing layer as required by the present application.

Claims 11, 13, 15, and 16 are patentable under 35 U.S.C. §102(b) over Liu

Applicants respectfully submit claims 11, 13, 15, and 16 are patentable under 35 U.S.C. §102(b) over Liu because Liu fails to teach all features of at least independent claim 11, from which claims 13, 15, and 16 depend. More specifically, Liu fails to teach the dielectric above and in contact with the first smoothing layer, as stated in claim 11. In all cases, the dielectric layer would be below the Ti rich TiN. Having a dielectric above and in contact with the first smoothing layer is not even contemplated.

Furthermore, having a dielectric above and in contact with any of the Ti rich TiN layers in Liu would result in a non-functional metal stack. The resulting stack would be (from the bottom) Ti rich TiN/dielectric/TiN or Ti rich TiN/dielectric/AlCu. In both cases, the functionality of the metal stack would be compromised. For at least this reason, Applicants regard their invention as being patentable in all regards over Liu.

Therefore, claims 11, 13, 15, and 16 are patentable over Liu under 35 U.S.C. 102(b).

Claims 3, 7, 10, and 14 are objected to as being dependent on a rejected base claim

Claims 3, 7, and 10 are dependent on independent claim 1. Applicants have presented an argument for the patentability of claim 1 above and, therefore, will not repeat the details.

Similarly, claim 11, which is the independent claim from which claim 14 depends also has been discussed above.

For those reasons, it is believed that claims 3, 7, 10, and 14 are patentable.

Applicants wish to thank the Examiner for allowing claims 17-19.

Although Applicants may disagree with statements made by the Examiner in reference to the claims and the cited references, Applicants are not discussing all these statements in the current Office Action since reasons for the patentability of each pending claim is provided without addressing these statements. Therefore, Applicants reserve the right to address these statements at a later time if necessary.

Applicants earnestly solicit allowance of all pending claims. Please contact Applicant's practitioner listed below if there are any issues.

If Applicant has overlooked any additional fees, or if any overpayment has been made, the Commissioner is hereby authorized to credit or debit Deposit Account 503079, Freescale Semiconductor, Inc.

Respectfully submitted,

By: _____

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